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For: IMAGE FILE MANAGING METHOD, ELECTRONIC CAMERA AND IMAGE
FILING APPARATUS

DECLARATION ACCOMPANYING ENGLISH TRANSLATION

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Sir:

Hiroyuki Iida, of No.503, 15-13, Higashi 1-Chome, Kunitachi-Shi, Tokyo 186-0002

Japan hereby declare that:


I am familiar with both the Japanese and English languages.

I have prepared the English translation attached hereto of the certified copy of Japanese Patent Application No. 11-322275, filed on November 12, 1999.

I believe that the attached English translation is a true, faithful and exact translation of the corresponding Japanese language application.

I further declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Date: January 22, 2004


Hiroyuki IIDA
Translator, Japanese patent attorney

PATENT OFFICE

JAPANESE GOVERNMENT

This is to certify that the annexed is a true copy of the following application as filed with this Office.

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Applicant: Fuji Photo Film Co., Ltd.

Date: October 6, 2000

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【Document Name】 Specification

【Title of the Invention】 Image Film Managing Method, Electronic Camera and Image Filing Apparatus

【Scope of the Patent Claims】

【Claim 1】

An image file managing method, comprising the steps of:
using a recording medium which has unique identification information recorded in a non-rewritable area;

discriminating between presence and absence of an image folder having an image folder name corresponding to the identification information at the time of depositing an image file recorded on the recording medium in an image filing apparatus;

depositing the image file in the image folder when the image folder is found; and

creating an image folder having the image folder name corresponding to the identification information when the image folder is not found and depositing the image file in the created image folder.

【Claim 2】

The image filing managing method according to claim 1, wherein an image file name is created by adding 1 to an image file name which has a largest number out of deposited image files and an image file is deposited with this created image file name when an identical image file name is found in an image folder at the time of depositing an image file with an image file name including a digit in the image folder.

【Claim 3】

The image file managing method according to one of claims 1 and 2, wherein the identification information on the recording medium is read out, so that access can be made only to image files in an image folder with an image folder name corresponding to the identification information.

【Claim 4】

The image file managing method according to one of claims 1, 2 and 3, wherein the image folder name is created by enciphering the identification information.

【Claim 5】

An electronic camera which records image data on a recording medium having unique identification information recorded in a non-rewritable area, the camera comprising:

an identification information acquiring device which acquires the

identification information from the recording medium;

a retrieving device which retrieves an image folder with an image folder name corresponding to the acquired identification information;

an image folder creating device which creates an image folder with an image folder name corresponding to the identification information when an image folder with the image folder name corresponding to the identification information is not found or when the recording medium is initialized; and

a depositing device which deposits image data acquired at photographing as an image file together with an image file name in the image folder.

【Claim 6】

An image filing apparatus which deposits an image file recorded on a recording medium with unique identification information recorded in a non-rewritable area, the image filing apparatus comprising:

an identification information acquiring device which acquires the identification information from the recording medium;

a retrieving device which retrieves an image folder with an image folder name corresponding to the acquired identification information;

an image folder creating device which creates an image folder with the image folder name corresponding to the identification information when the image folder with the image folder name corresponding to the identification information is not found; and

a depositing device which deposits an image file recorded on the recording medium in the image folder corresponding to the recording medium.

【Detailed Description of the Invention】

【0001】

【Field of the Invention】

The present invention relates to an image file managing method, an electronic camera and an image filing apparatus, and more specifically technique for depositing an image file in a predetermined image folder.

【0002】

【Prior Art】

Conventionally, an image input system is configured to read an image with a scanner shared with many users, to transmit the image to a deposit destination directory corresponding to identification information (user ID) and to deposit the image in the directory (Japanese Patent Application Publication No. 10-190993).

【0003】

The scanner of the image input system is configured to receive the user ID from a wireless card possessed by a user, so that the user ID can be easily read out

without a step of inputting the user ID with a panel of the scanner every reading and transmitting of an image or the like, or a step of reading the user ID with a card reader of the scanner.

【0004】

【Object to be Achieved by the Invention】

However, the above-described conventional image input system has a disadvantage such that a scanner manager sets up the user data with keys or the like on an operational panel so as to preliminarily store user data including a deposit destination directory for each user ID in a directory management table.

【0005】

Furthermore, the conventional image input system is not suitable for management of images, since the information corresponding to the user ID is not determined: an image scanned by a scanner is transmitted and deposited in the deposit destination directory corresponding to the user ID based on the user ID transmitted from the wireless card. In particular, the image scanned by the scanner includes a photographic image and an original image such as typescript documents prepared by a word processor, which is deposited in a deposit destination directory (including data converted into image codes); therefore, such conventional image input system is not suitable for management of images.

【0006】

In view of the above-described circumstances, the present invention, as its object, provides an image file managing method, an electronic camera and an image filing apparatus, which automatically prepare an image folder for depositing an image file for each recording medium and manage images for each recording medium.

【0007】

【Means for Achieving Object】

In order to attain the above described object, an image file managing method with reference to claim 1 comprises the steps of: using a recording medium which has unique identification information recorded in a non-rewritable area; discriminating between presence and absence of an image folder with an image folder name corresponding to the identification information at the time of depositing an image file recorded on the recording medium in an image filing apparatus; depositing the image file in the image folder when the image folder is found; and creating an image folder with the image folder name corresponding to the identification information when the image folder is not found and depositing the image file in the created image folder.

【0008】

Specifically, upon an absence of an image folder with the image folder name corresponding to the identification information recorded in the non-rewritable area of the recording medium, the image folder with image folder name is automatically created based on the unique identification information, and the image file recorded in the recording medium is deposited in the image folder that is separately created for the recording medium. Accordingly, the image files read from the same recording medium are deposited in the same image folder, thereby images are controlled for each recording medium, and a step of designating deposit destinations for image files is eliminated.

【0009】

The image filing managing method with reference to claim 2 is characterized in that an image file name is created by adding 1 to an image file name that has a largest number out of deposited image files and an image file is deposited with this created image file name, when an identical image file name is found in an image folder at the time of depositing an image file with an image file name including a digit in the image folder. Accordingly, the image name filing method is capable of preventing an image file name from being duplicated, and also preventing an image from being accidentally lost.

【0010】

The image filing managing method with reference to claim 3 is characterized in that the identification information on the recording medium is read out, so that access can be only made to image files in an image folder with an image folder name corresponding to the identification information. Furthermore, the above-described folder name with reference to claim 4 is characterized in that it is created by enciphering the identification information. In other words, only a person who owns the recording medium is allowed to access to an image file deposited in the image folder corresponding to the recording medium with a use of the recording medium, so that security of the deposited image file is enhanced.

【0011】

In order to attain the above-described object, according to claim 5, the present invention is directed to an electronic camera which records image data on a recording medium having unique identification information recorded in a non-rewritable area, the camera comprising: an identification information acquiring device which acquires the identification information from the recording medium; a retrieving device which retrieves an image folder with an image folder name corresponding to the acquired identification information; an image folder creating device which creates an image folder with an image folder name corresponding to the identification information when an image folder having the image folder name

corresponding to the identification information is not found or when the recording medium is initialized; and a depositing device which deposits an image file including image data acquired at photographing and an image file name in the image folder.

【0012】

In order to attain the above described object, according to claim 6, the present invention is directed to an image filing apparatus which deposits an image file recorded on a recording medium having unique identification information recorded in a non-rewritable area, the image filing apparatus comprising: an identification information acquiring device which acquires the identification information from the recording medium; a retrieving device which retrieves an image folder with an image folder name corresponding to the acquired identification information; an image folder creating device which creates an image folder with the image folder name corresponding to the identification information when the image folder with the image folder name corresponding to the identification information is not found; and a depositing device which deposits an image file recorded on the recording medium in the image folder corresponding to the recording medium.

【0013】

【Detailed Description of the Preferred Embodiments】

Hereunder preferred embodiments for a image file managing method, an electronic camera and an image filing apparatus of the present invention will be described in detail in accordance with the accompanied drawings.

【0014】

First, the image file managing method according to the present invention will be explained.

【0015】

Fig. 1 shows memory arrangement of a memory card 10 used as a recording medium in the present invention. As shown in Fig. 1, the memory card 10 includes a non-rewritable area 10A and a rewritable area 10B. Unique identification information (ABC12345 in Fig. 1) and attribute information such as a memory capacity, a speed or the like are recorded in the non-rewritable area, and image managing information and image data, which are controlled in accordance with the image managing information, are recorded in the rewritable area 10B.

【0016】

When the memory card 10 is initialized in the electronic camera according to the present invention, a directory (image folder) 11 is automatically created

based on the identification information recorded in the non-rewritable area 10A and recorded as the image managing information. In an embodiment shown in Fig. 1, the identification information is the name of the image folder.

【0017】

Image data in each frame, which is acquired at photographing, is recorded in an image folder with an image file name of "DSC00001.JPC through DSC99999.JPC" as shown in Fig. 2.

【0018】

Next, the explanation is given for a method of managing image files recorded on the memory card with an image filing apparatus according to the present invention.

【0019】

Fig. 3 shows file arrangement of a memory medium having a large capacity such as a hard disk of the image filing apparatus. As shown in Fig. 3, when the memory card is inserted, the image filing apparatus reads unique identification information in the memory card. The image files of the inserted memory card are recorded in an image folder when the image folder with a name of the identification information is in image managing information of the files.

【0020】

When an image folder with the name of the unique identification information is not found in the image managing information of the files, an image folder with the name of the identification information is created in accordance with the identification information read from the memory card, and the image files of the memory card is recorded in the newly-created image folder.

【0021】

In specific, the image folder with the name of the identification information is automatically created and the image files recorded on the memory card 10 are deposited in the image folder that is separately created for the memory card when there is no image folder with the name of the image folder corresponding to the unique identification information recorded in the non-rewritable area 10A of the memory card 10. Accordingly, image files read from the same memory card are deposited in the same image folder, thereby images are controlled for each recording medium, and a step of designating deposit destinations for image files is eliminated.

【0022】

Fig. 4 is a block diagram showing a configuration of an electronic camera

according to the present invention.

【0023】

As shown in Fig. 4, switch inputs are applied to a main CPU 30 through a release switch 50 and operation switches 48 including a mode dial for selecting one of a photography mode, a reproduction mode, etc., a multi-function cross key and a power switch. The main CPU 30 performs a process in accordance with the inputs from the operation switches 48 and the release switch 50. Furthermore, the main CPU 30 transmits required data between an electrically erasable programmable ROM (EEPROM) 52 and an enciphering block 54. Various kinds of parameters and data related to camera control are provided in the EEPROM 52. The enciphering block 54 receives and enciphers the identification information sent from the main CPU 30, and then sent it back to the main CPU 30.

【0024】

When a photography mode is selected and the main CPU 30 detects that the release switch 50 is depressed, the main CPU 30 sends a command to a camera CPU 22 via CPU communications. Upon input of the command, the camera CPU 22 performs a focus control and an exposure control in accordance with a measured photometric value and a measured distance value, so that image light of a subject is focused onto a light receiving surface of a solid-state imaging device (CCD) 13 by an optical unit 12 including a photographic lens 12A, an iris 12B, and the like.

【0025】

CCD 13 converts the image light focused on the light receiving surface into signal charges in accordance with an amount of the image light. The signal charges accumulated in such a method are read out consecutively as voltage signals (image signals) based on the signal charges in accordance with clock pulses provided from a clock generating circuit 24. The image signal output from the CCD 13 is sent to an analog processing circuit 14, which performs white balance adjustment and gamma correction. The image signal that is processed by the analog processing circuit 14 is converted into digital data by an A/D converter 16, and temporality deposited in a buffer memory 18.

【0026】

The camera CPU 22 activates a strobe control circuit 26 when the subject is in low light. The strobe control circuit 26 controls a charge of a main capacitor (not shown) and electric discharge (light emission) from a xenon lamp 28 in accordance with an operation of the release switch when the subject is in low light. Furthermore, the strobe control circuit 26 controls an electric charge accumulating time of the CCD 13 (a shutter speed) with the clock generating circuit 24. The clock generating circuit 24 outputs clock pulses for driving the CCD 13, the analog

processing circuit 14 and the A/D converter 16 in order to synchronize these circuits.

【0027】

A YC processing circuit 20 converts image data in the buffer memory 18 into YC signals (a luminance signal Y and a chroma signal C) in accordance with a command entered by the main CPU 30 through a bus 21, and then deposits the YC signals again into the buffer memory 18. Thereafter, the main CPU 30 sends a command to a compression/expansion circuit 32 to compress the YC signals in the buffer memory, so that compressed image data is stored in the memory card 10 by a card interface 34.

【0028】

Also, the YC signals deposited in the buffer memory 18 are converted into RGB data by a YC/RGB converter 42, and transmitted to a liquid crystal monitor 46 by a driver 44. Accordingly, the liquid crystal monitor 46 displays a moving image or a still image in the photography mode, or an image stored in the memory card 10 in the reproduction mode. In Fig. 4, a reference numeral 38 denotes a liquid crystal panel for displaying items such as a frame number, and a reference numeral 40 denotes a battery which supplies power to each block in the electronic camera.

【0029】

Next, description will be made of image recording operations of the electronic camera having the above-described configuration with reference to a flow chart in Fig. 5.

【0030】

First, the main CPU 30 determines whether the memory card 10 is inserted into a card slot of the electronic camera (step S10). Upon insert of the memory card 10, the main CPU 30 reads out the unique identification information from the non-rewritable area 10A (see Fig. 1) of the memory card 10 (step S12). Then, the main CPU 30 enciphers the read identification information with an enciphering block 54 (step S14), and retrieves a directory with a name of the enciphered identification information (step S16). When a directory with the name of the enciphered identification information is found in image managing information of the memory card 10, the main CPU 30 proceeds to step S22. When a directory with the name of the enciphered identification information is not found, the main CPU 30 creates a directory with the name of the enciphered identification information (step S20) and proceeds to step S22.

【0031】

At step S22, when the release switch 50 is turned ON, image data in a frame is stored in the memory card 10 (step S24), and is assigned an image file name (a newest number out of "DSC00001.JPC through DSC99999.JPC), so that the image data is registered in the directory with the name of the enciphered identification information (step S26).

【0032】

A directory with the name of the enciphered identification information of the memory card 10 is automatically created in a case where the memory card 10 is initialized with the electronic camera.

【0033】

Fig. 6 is a block diagram showing an image filing apparatus according to the present invention.

【0034】

As shown in Fig. 6, the image filing apparatus comprises a magnetic disk 60, a card reader/writer 62, an enciphering block 64, a control CPU 66, a main memory 68, a monitor 70, and a keyboard 72.

【0035】

The magnetic disk 60 has programs for operating the image filing apparatus, and a memory capacity that is sufficient for storing a large number of image files. Also, the main memory 68 has required software, and the control CPU 66 performs a process of the files with the software of the main memory 68 in accordance with an input operation from the keyboard 72 or a mouse (not shown). The enciphering block 64 performs enciphering process, which is identical to that of the enciphering block 54 of the electronic camera shown in Fig.4.

【0036】

Next, description will be made of operations of the above-described image filing apparatus with reference to flow charts shown in FigS. 7 and 8.

【0037】

Fig. 7 is a flow chart showing operating sequence for storing the image files recorded in the memory card 10 into the magnetic disk 60.

【0038】

As shown in Fig. 7, the control CPU 66 determines whether the memory card 10 is inserted into the card slot of the card reader/writer 62 (step S30). When the memory card 10 is inserted in the card slot, the control CPU reads out the unique identification information from the non-rewritable area 10A of the memory

card 10 (see Fig. 1) (step S32). Then, the control CPU 66 enciphers the read identification information with the enciphering block 64 and acquires enciphered identification information (a deciphered directory name) (step S34).

【0039】

Then, the control CPU 66 retrieves image data in the directory (step S36). The control CPU 66 determines whether the retrieved image data is deposited (step 38), and selects image files to be deposited (step 40) when the image data is deposited. The image file is selected with the keyboard 72 or the like while a user referring to a display screen of the monitor 70. The control CPU 66 determines whether an image folder with the deciphered directory name (image folder name) is found (step S42). When an image folder with the deciphered directory name is found, the control CPU 66 proceeds to step S46. When an image folder with the deciphered directory name is not found, the control CPU 66 creates an image folder with the deciphered directory name at step S44, and then proceeds to step S46.

【0040】

At step S46, the control CPU 66 determines whether an image file of which image file name has the same image file name with the image file to be deposited is found in the image folder. When an image file with the same image file name is not found, the image file is deposited in the image folder (step S50), and the image file name associated with the image file is registered (step S52).

【0041】

When an image file with the identical image file name is found, on the other hand, the control CPU 66 creates a new image file name by adding 1 to the image file name that has a final number in the image folder (step S48). Thereafter, the image file is deposited in the newly-created image folder (step S50), and the created image file name is registered (step S52).

【0042】

Fig. 8 is a flow chart showing operating sequence for reproducing an image on the image file, which is deposited in the above-described method.

【0043】

As shown in Fig. 8, the control CPU 66 determines whether the memory card 10 is inserted into the card slot of the card reader/writer 62 (step S60). When the memory card 10 is inserted, the control CPU 66 reads out the unique identification information from the non-rewritable area 10A of the memory card 10 (step S62). Thereafter, the control CPU 66 decipheres the read identification information and acquires a deciphered directory name (step S64).

【0044】

Then, the control CPU 66 retrieves image data in the directory (step S66). The control CPU 66 determines whether an image folder with the deciphered directory name (the image folder name) is found (step S68). When a folder name is not found, the control CPU 66 issues a warning (step S70), and terminates the operating sequence.

【0045】

When an image folder with the folder name is found, on the other hand, the control CPU 66 acquires image information such as thumbnail image information in the image folder and allows the monitor 70 to display an image list based on the image information (step S74). When a desired image to be reproduced is selected with the keyboard 72 or the like while a user referring to the list of images (step S76), the control CPU 66 reads out main image data of the selected image and allows the monitor 70 to display the selected image based on the main image data (step S78).

【0046】

Then, the control CPU 66 determines whether the reproduction end is instructed (step S80). When the reproduction end is not instructed, the process returns to step S76 to allow another image to be selected. When the reproduction end is instructed, the reproduction of image with the image filing apparatus is terminated.

【0047】

As described in the above, the image filing apparatus according to the present invention is configured to limit an access such that the user is prohibited from accessing to the image file, unless the user uses a memory card that was used for depositing the image file (a memory card with identification information corresponding to a name of an image folder). Accordingly, security of the image is enhanced, in a case where the image filing apparatus is shared with a plurality of persons. Even when access can be made to the images in the image folder without a memory card, an image folder is not identified by the identification information of the memory card due to the enciphered image folder name; therefore the security of the images is assured.

【0048】

【Effect of the Invention】

The image filing apparatus according to the present invention is configured to automatically create an image folder with an image folder name corresponding to unique identification information based on the identification information recorded in a non-rewritable area of a recording medium, and the image files

recorded on the recording medium are deposited in an image folder that is separately created for the recording medium. Accordingly, images can be controlled for each recording medium, and a step of designating deposit destinations for image files is eliminated.

【0049】

Furthermore, the image filing apparatus according to the present invention is configured to allow only a user who owns a recording medium to access to image files which are deposited in an image folder with the recording medium, thereby enhancing security of the deposited image files.

【Brief Description of the Drawings】

【Fig. 1】

a diagram showing memory arrangement on a memory card used as a recording medium according to the present invention

【Fig. 2】

a diagram showing image file arrangement in an image folder

【Fig. 3】

a diagram showing file arrangement in an image filing apparatus

【Fig. 4】

a block diagram showing a configuration of an electronic camera according to the present invention

【Fig. 5】

a flow chart showing image recording operations of the electronic camera according to the present invention

【Fig. 6】

a block diagram showing a configuration of an image filing apparatus according to the present invention

【Fig. 7】

a flow chart showing an operation sequence for storing an image file recorded on a memory card into a magnetic disk

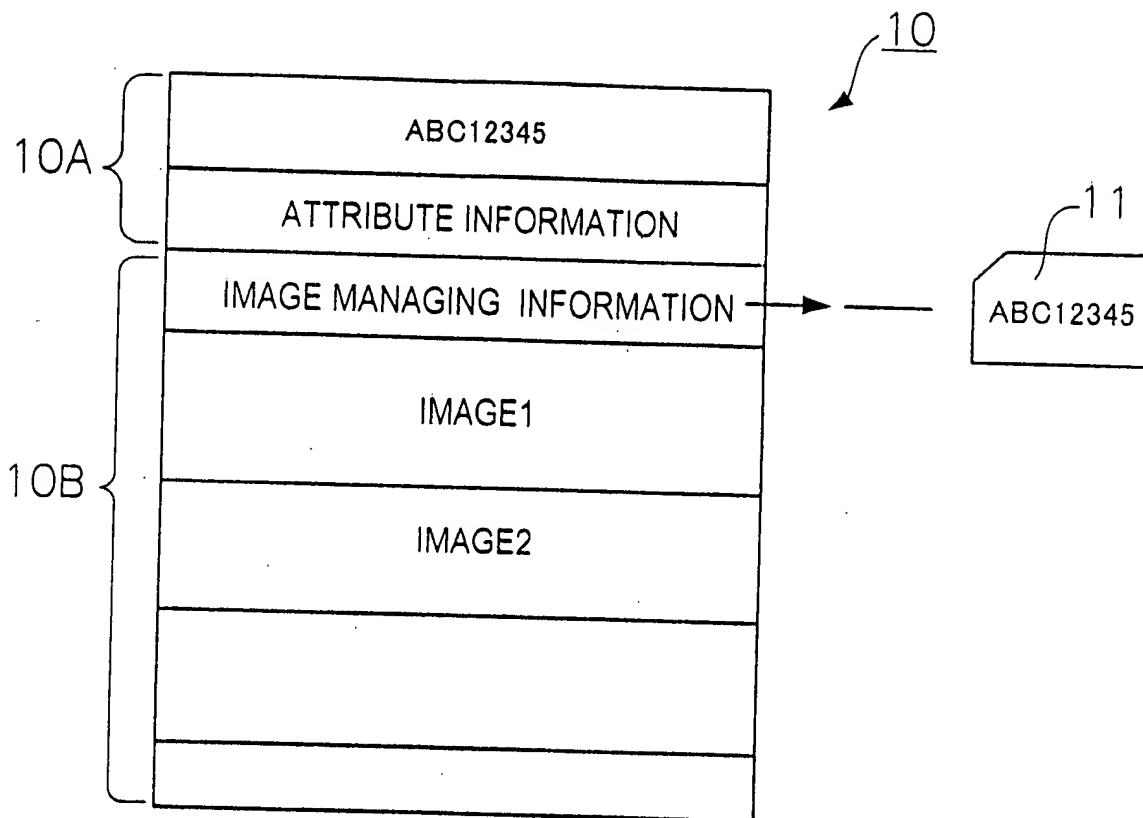
【Fig. 8】

a flow chart showing an operation sequence for reproducing an image of an image file deposited on a magnetic disk

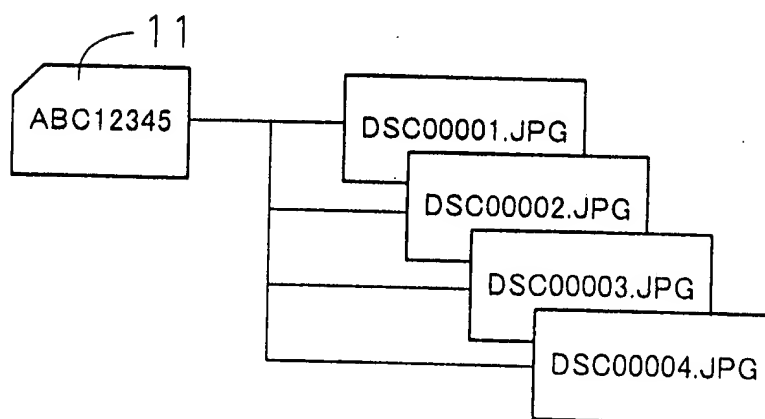
【Brief Description of the Reference Numbers】

10...memory card	10A...non-rewritable area	10B...rewritable area
11...image folder	12...optical unit	13...CCD
22...camera CPU		
30...main CPU	50...release switch	54,64...enciphering block
60...magnetic disk	62...card reader/writer	66...control CPU
68...main memory	70...monitor	72...keyboard

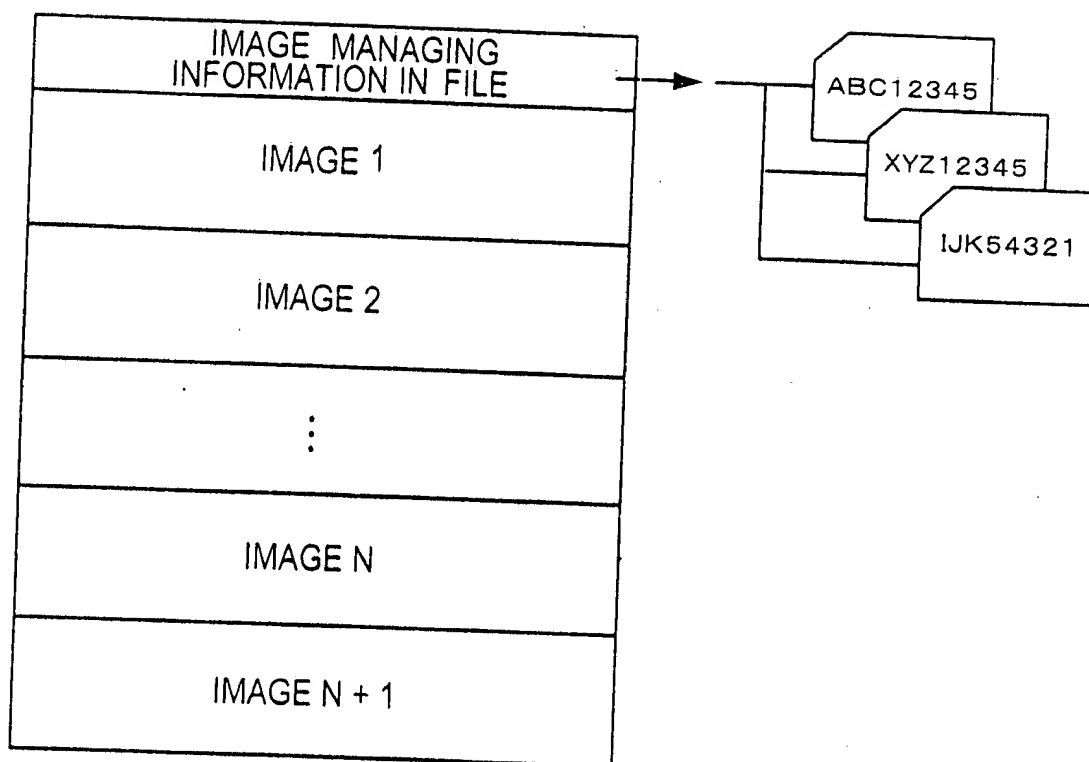
【Document Name】 Drawings
【Fig. 1】



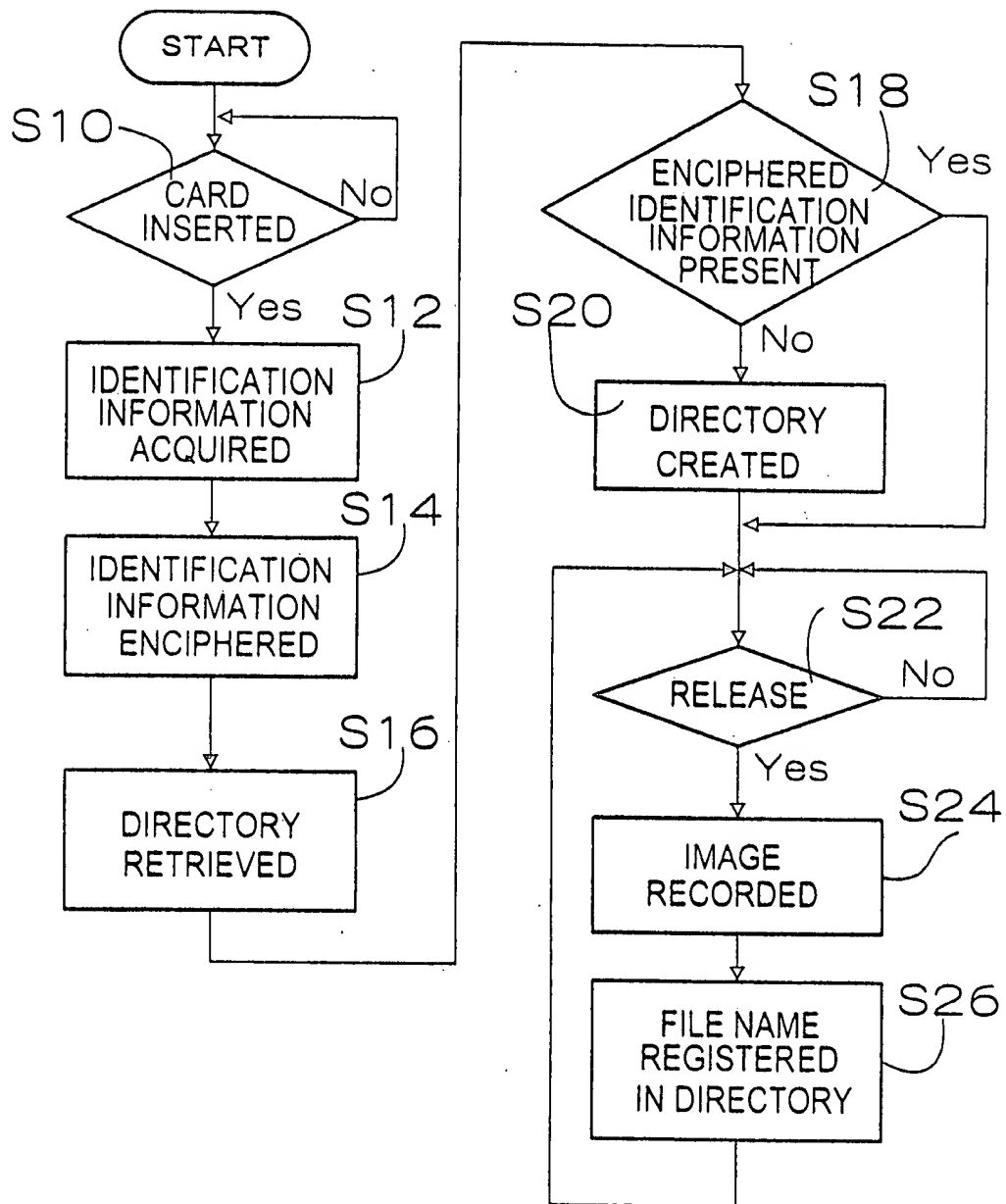
【Fig. 2】



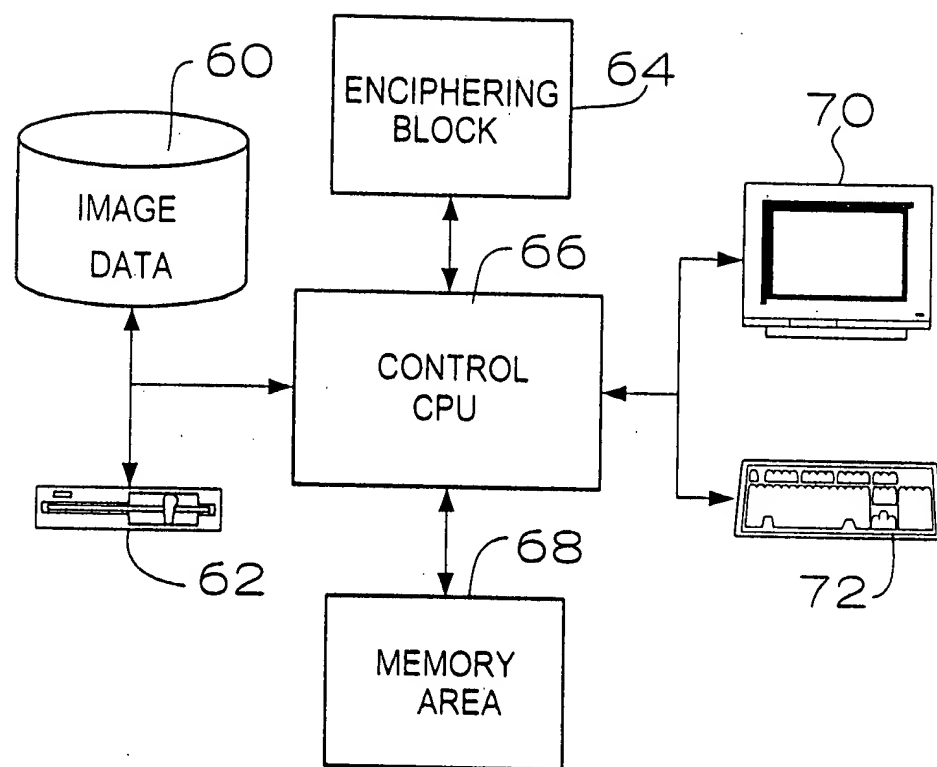
【Fig. 3】



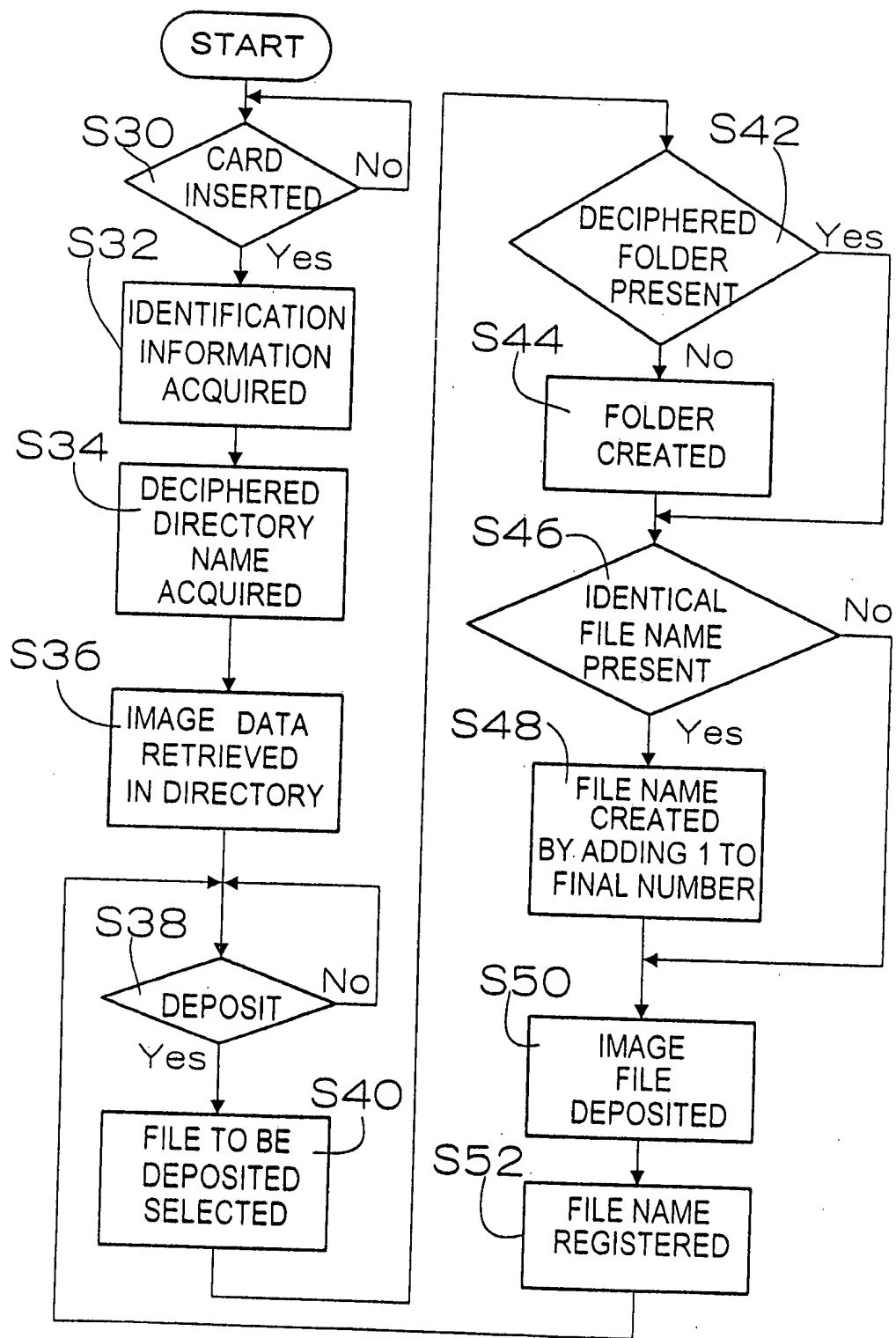
[Fig. 5]



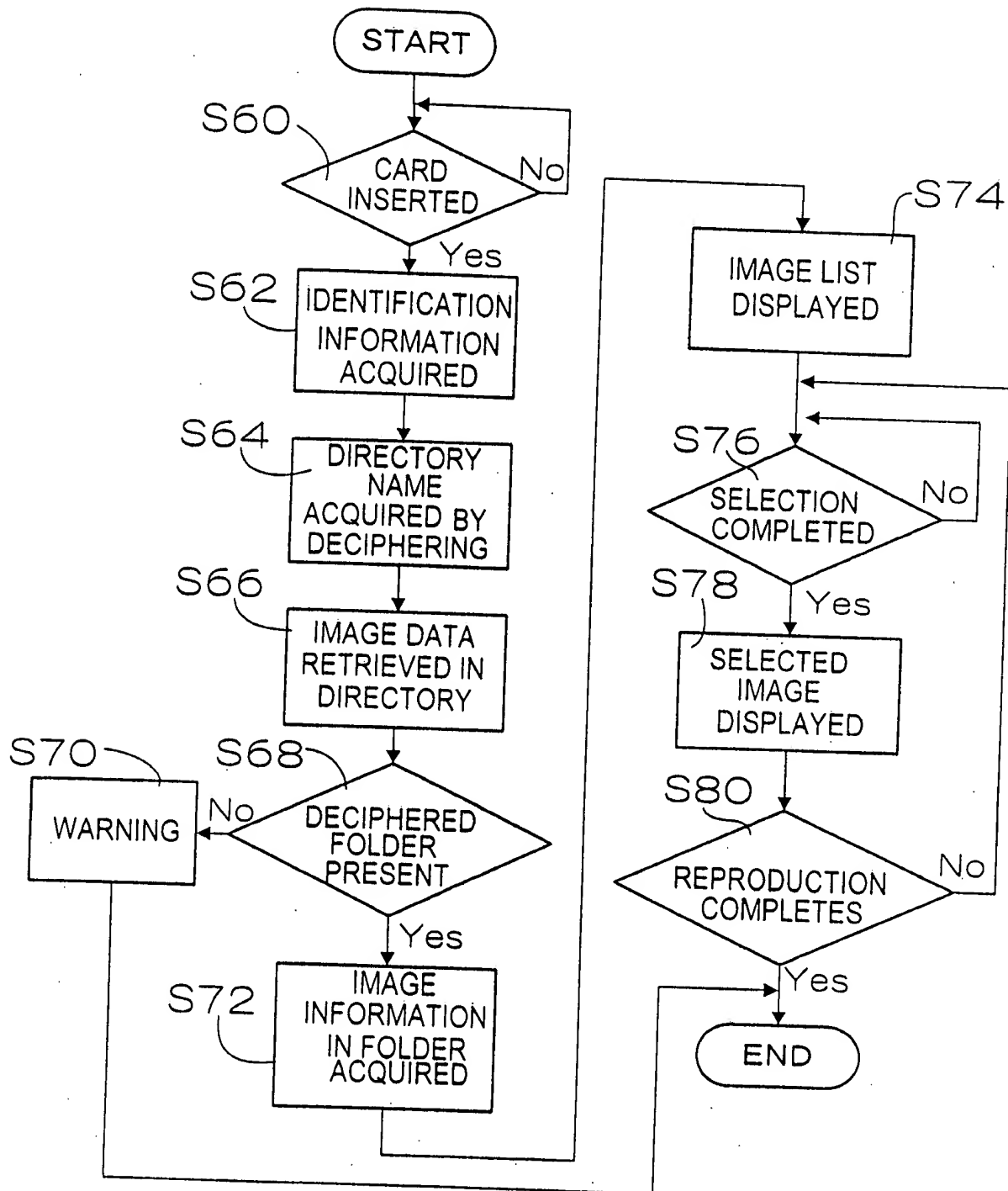
【Fig. 6】



[Fig. 7]



[Fig. 8]



【Document Name】 Abstract

【Abstract】

【Object】

An image folder for storing an image file is automatically created for each recording medium, and the image file recorded on the recording medium is managed with each recording medium.

【Means for Achieving Object】

When an image file recorded in a memory card including a non-rewritable area having unique identification information therein is deposited in an image filing apparatus, the identification information is acquired from the memory card (step S32), and the control CPU determines whether an image folder with a directory name (an image folder name) corresponding to the identification information is found (step S42). When an image folder with the directory name is found, the image file is recorded in the image folder (step S50). When an image folder with the directory name is not found, an image folder with the image folder name corresponding to the identification information is created (step S44), and then the image file is deposited in the newly-created image folder (step S50).

【Selected Drawing】

Fig. 7